

47
-52-**WE CLAIM:**

1. A chemical conjugate for treating a nerve cell related disorder, comprising:
an inactive Clostridial neurotoxin having specificity for a target nerve cell;
a drug or other bioactive molecule attached to said neurotoxin, wherein said
neurotoxin retains its ability to enter said target nerve cell.
2. The chemical conjugate of Claim 1, wherein said Clostridial neurotoxin is
selected from the group consisting of: tetanus toxin, botulinum toxin A, botulinum toxin B,
botulinum toxin C, botulinum toxin D, botulinum toxin E, botulinum toxin F and botulinum
toxin G.
3. The chemical conjugate of Claim 1, wherein said Clostridial neurotoxin has
been inactivated by an amino acid change in its light chain.
4. The chemical conjugate of Claim 3, wherein said inactivated Clostridial
neurotoxin is tetanus toxin having a modification of Glu²³⁴, a botulinum toxin A having a
modification at His²²⁷ and/or Glu²²⁴, or a botulinum toxin other than botulinum toxin A having
a modification at a site corresponding to His²²⁷ and/or Glu²²⁴ of botulinum toxin A.
5. The chemical conjugate of any of the foregoing claims for use in the treatment
of a neuromuscular dysfunction in a mammal.
6. The chemical conjugate of Claim 5, for use in the treatment of a
neuromuscular dysfunction relating to uncontrollable muscle spasms.
7. Use of the chemical conjugate of any of Claims 1-4 in the preparation of a
medicament for treatment of a neuromuscular dysfunction in a mammal.
8. The use of Claim 7, wherein said neuromuscular dysfunction relates to
uncontrollable muscle spasms.
9. The chemical conjugate of any one of Claims 1-4, wherein said drug is an
active ingredient for treatment of botulism or tetanus.
10. The chemical conjugate of Claim 9, for use in the treatment of botulism or
tetanus.
11. Use of the chemical conjugate of Claim 9 in the preparation of a medicament
for treatment of botulism or tetanus in a mammal.
12. Use of an inactive Clostridial neurotoxin in the preparation of a medicament
for treatment of acute botulinum toxin poisoning.
13. The use of Claim 12, wherein the Clostridial neurotoxin is used without
conjugation to another drug.

48
-53-

14. Use of chemical conjugate comprising an active clostridial neurotoxin and a drug in the preparation of a medicament for treatment of focal dystonias, spasticities due to stroke or traumatic brain or spinal cord injury, blepharospasm, strabismus, cerebral palsy or back pain due to muscle spasms.

5 15. A method of treating a neuromuscular dysfunction in a mammal, comprising:
preparing a pharmaceutically active solution, wherein said solution comprises
a Clostridial neurotoxin linked to a drug; and
introducing an effective quantity of said pharmaceutically active solution into
a mammal.

10 16. The method of Claim 15, wherein said Clostridial neurotoxin is selected from
the group consisting of: tetanus toxin, botulinum toxin A, botulinum toxin B, botulinum toxin
C, botulinum toxin D, botulinum toxin E, botulinum toxin F and botulinum toxin G.

17. The method of Claim 15, wherein said Clostridial neurotoxin has been
inactivated by an amino acid change in its light chain.

15 18. The method of Claim 15, wherein said drug inhibits neurotransmitter release.

19. The method of Claim 18, wherein said drug inhibits the activity of
synaptobrevin.

20. The method of Claim 15, wherein said neuromuscular dysfunction relates to
uncontrollable muscle spasms.